



ENTC13011 *Environmental Engineering*

Term 2 - 2017

Profile information current as at 20/04/2024 12:47 pm

All details in this unit profile for ENTC13011 have been officially approved by CQUniversity and represent a learning partnership between the University and you (our student). The information will not be changed unless absolutely necessary and any change will be clearly indicated by an approved correction included in the profile.

General Information

Overview

This unit provides students with an understanding of the effects of waste on the natural environment, the principles of environmental management, legislation, and the waste auditing process.

Details

Career Level: *Undergraduate*

Unit Level: *Level 3*

Credit Points: 6

Student Contribution Band: 8

Fraction of Full-Time Student Load: 0.125

Pre-requisites or Co-requisites

There are no requisites for this unit.

Important note: Students enrolled in a subsequent unit who failed their pre-requisite unit, should drop the subsequent unit before the census date or within 10 working days of Fail grade notification. Students who do not drop the unit in this timeframe cannot later drop the unit without academic and financial liability. See details in the [Assessment Policy and Procedure \(Higher Education Coursework\)](#).

Offerings For Term 2 - 2017

- Distance

Attendance Requirements

All on-campus students are expected to attend scheduled classes - in some units, these classes are identified as a mandatory (pass/fail) component and attendance is compulsory. International students, on a student visa, must maintain a full time study load and meet both attendance and academic progress requirements in each study period (satisfactory attendance for International students is defined as maintaining at least an 80% attendance record).

Website

[This unit has a website, within the Moodle system, which is available two weeks before the start of term. It is important that you visit your Moodle site throughout the term. Please visit Moodle for more information.](#)

Class and Assessment Overview

Recommended Student Time Commitment

Each 6-credit Undergraduate unit at CQUniversity requires an overall time commitment of an average of 12.5 hours of study per week, making a total of 150 hours for the unit.

Class Timetable

[Regional Campuses](#)

Bundaberg, Cairns, Emerald, Gladstone, Mackay, Rockhampton, Townsville

[Metropolitan Campuses](#)

Adelaide, Brisbane, Melbourne, Perth, Sydney

Assessment Overview

1. **Written Assessment**

Weighting: 30%

2. **Written Assessment**

Weighting: 30%

3. **Presentation and Written Assessment**

Weighting: 40%

4. **Written Assessment**

Weighting: Pass/Fail

Assessment Grading

This is a graded unit: your overall grade will be calculated from the marks or grades for each assessment task, based on the relative weightings shown in the table above. You must obtain an overall mark for the unit of at least 50%, or an overall grade of 'pass' in order to pass the unit. If any 'pass/fail' tasks are shown in the table above they must also be completed successfully ('pass' grade). You must also meet any minimum mark requirements specified for a particular assessment task, as detailed in the 'assessment task' section (note that in some instances, the minimum mark for a task may be greater than 50%). Consult the [University's Grades and Results Policy](#) for more details of interim results and final grades.

CQUniversity Policies

All University policies are available on the [CQUniversity Policy site](#).

You may wish to view these policies:

- Grades and Results Policy
- Assessment Policy and Procedure (Higher Education Coursework)
- Review of Grade Procedure
- Student Academic Integrity Policy and Procedure
- Monitoring Academic Progress (MAP) Policy and Procedure – Domestic Students
- Monitoring Academic Progress (MAP) Policy and Procedure – International Students
- Student Refund and Credit Balance Policy and Procedure
- Student Feedback – Compliments and Complaints Policy and Procedure
- Information and Communications Technology Acceptable Use Policy and Procedure

This list is not an exhaustive list of all University policies. The full list of University policies are available on the [CQUniversity Policy site](#).

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	
1 - Communication	•	•	•	•	•	•	•	•	•	•	•	•
2 - Problem Solving	•	•	•	•	•	•	•	•	•	•	•	•
3 - Critical Thinking	•	•	•	•	•	•	•	•	•	•	•	•
4 - Information Literacy	•	•	•	•	•	•	•	•	•	•	•	•
5 - Team Work	•	•	•			•	•	•	•	•	•	•
6 - Information Technology Competence	•	•	•	•	•	•	•	•	•	•	•	•
7 - Cross Cultural Competence	•	•	•	•	•	•	•	•	•	•	•	•
8 - Ethical practice	•	•	•	•	•	•	•	•	•	•	•	•
9 - Social Innovation												
10 - Aboriginal and Torres Strait Islander Cultures												

Alignment of Assessment Tasks to Graduate Attributes

Assessment Tasks	Graduate Attributes									
	1	2	3	4	5	6	7	8	9	10
1 - Written Assessment - 30%	•	•	•	•		•		•		
2 - Written Assessment - 30%	•	•	•	•		•		•		
3 - Presentation and Written Assessment - 40%	•	•	•	•	•	•		•		
4 - Written Assessment - 0%	•	•	•	•	•	•		•		

Textbooks and Resources

Textbooks

ENTC13011

Prescribed

Principles of environmental engineering and science

Edition: 3 (2014)

Authors: Mackenzie L Davis & Susan J Masten

McGraw Hill

New York , New York , USA

ISBN: 9780073397900

Binding: Paperback

[View textbooks at the CQUniversity Bookshop](#)

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- Zoom

Referencing Style

All submissions for this unit must use the referencing style: [Harvard \(author-date\)](#)

For further information, see the Assessment Tasks.

Teaching Contacts

Andrew Hammond Unit Coordinator

a.hammond@cqu.edu.au

Schedule

Week 1 - 10 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Introduction to environmental engineering	Module 1 (available on the unit website).	

Week 2 - 17 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Effect of human actions on water resources	Module 2 (available on the unit website).	

Week 3 - 24 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Air pollution	Module 3 (available on the unit website).	

Week 4 - 31 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
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Air pollution control - Particulate contaminants Module 4 (available on the unit website).

Week 5 - 07 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic
Air pollution control - Gaseous contaminants	Module 5 (available on the unit website).	Assignment 1 Due: Week 5 Friday (11 Aug 2017) 5:00 pm AEST

Vacation Week - 14 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic
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Week 6 - 21 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic
Noise pollution and control	Module 6 (available on the unit website).	

Week 7 - 28 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic
Hazardous waste	Module 7 (available on the unit website).	

Week 8 - 04 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Radioactive waste	Module 8 (available on the unit website).	Assignment 2 Due: Week 8 Friday (8 Sept 2017) 5:00 pm AEST

Week 9 - 11 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Solid waste and solid waste disposal	Module 9 (available on the unit website).	

Week 10 - 18 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Environmental impact and economic assessment	Module 10 (available on the unit website).	

Week 11 - 25 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Environmental ethics Environmental case study presentations	Module 11 (available on the unit website).	Assessment Item 3: Presentations (Group Work)

Week 12 - 02 Oct 2017

Module/Topic	Chapter	Events and Submissions/Topic
Finalise Workbooks. Environmental case study presentations		Assessment Item 3: Presentations (Group Work)

Review/Exam Week - 09 Oct 2017

Module/Topic	Chapter	Events and Submissions/Topic
		Presentation and Written Assessment Due: Review/Exam Week Wednesday (11 Oct 2017) 5:00 pm AEST Workbook Due: Review/Exam Week Tuesday (10 Oct 2017) 5:00 pm AEST

Exam Week - 16 Oct 2017

Module/Topic	Chapter	Events and Submissions/Topic
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Assessment Tasks

1 Assignment 1

Assessment Type

Written Assessment

Task Description

Noise, dust and water pollution are ubiquitous to any hard rock-quarry which operates in a peri-urban environment. You have been contracted to provide scientific advice to the quarry owners on the following:

- Recommend which instruments you would utilize to measure these parameters
- What are the environmental guidelines and standards (for noise, water and dust), which have to be adhered to under local (e.g. Council), state (e.g. Queensland) and possible federal legislation.
- How would you interpret the instrumental data i.e. provide examples of physical and chemical results from monitoring equipment and explain what these mean.
- Describe some of the limitations of the monitoring methods and or equipment. How would you address these?
- What would your recommendations be to the quarry owner on how to minimize noise, dust and water pollution to the neighboring suburban community. What operational changes would you recommend and why?

This assignment must take the form of a scientific consultancy report. It will need to include the following:

- An executive summary
- Introduction
- Methods
- Recommendations
- References (Harvard System)
- Appendices

Assessment Due Date

Week 5 Friday (11 Aug 2017) 5:00 pm AEST

Submit electronically as a Word or pdf file via Moodle with your name, unit code and assignment number e.g. ENTC13011 Assignment 1

Return Date to Students

Returned electronically or via Moodle as ENTC13011 Assignment 1 Marked

Weighting

30%

Minimum mark or grade

To Pass this unit you must submit all assessment items (assignments) and obtain a minimum of 40% for any single assessment item (assignment) and must obtain an overall grade of 50% or more on all assessment items (assignments).

Assessment Criteria

The assessment criteria will be based on:

- Presentation and layout i.e. the general appearance and style of the document, attention to detail and quality to provide a legible, professional looking scientific document
- Effective written communication skills i.e. are clear, coherent and succinct that demonstrate an understanding of content. This includes readability and good grammar.
- Content. This includes the accuracy and relevance of answer, application of knowledge, language and grammar used in answering questions
- Evidence of sourcing and referencing relevant material beyond that provided in the Study Guide material
- Showing the requisite equations and using the appropriate SI units and symbols
- All steps and workings to calculations to be submitted to show how an answer was derived
- Use of "in text" referencing, appropriately cited figures and tables, a complete reference or bibliographic list at the end of the assignment. All referencing is to be undertaken using the Harvard System.

Referencing Style

- [Harvard \(author-date\)](#)

Submission

Online

Submission Instructions

Submit electronically via Moodle with your name, unit code and assignment number e.g. ENTC13011 Assignment 1

Learning Outcomes Assessed

- Understand the meaning and importance of environmental aspects of the engineering profession, as well as risk analysis and its assessment.
- Describe water pollutants, non-point sources of water pollution and water quality management.
- List the types of air pollution and describe their influence on human health.
- Describe the methods of measurements and controls of particulate contaminants.
- Explain noise pollution problems, reasons why widespread recognition of noise is a significant environmental pollution and potential hazard and some methods of noise pollution control.
- Define the major consideration in the implementations of an environmental policy.
- Describe environmental ethics, in terms of a relationship between people and nature.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Information Technology Competence
- Ethical practice

2 Assignment 2

Assessment Type

Written Assessment

Task Description

The term "radioactive nuclear wastes" evokes a strong public reaction. Within Australia, the total quantity of radioactive waste has been accumulating since the 1950s. Identify what these wastes are, where and how are they stored, what legislative and environmental safeguards are in place and are these adequately addressed from an engineering perspective? Discuss what solutions the Australian Government has come up with. What is the status of our "national nuclear waste repository", what are the environmental engineering issues and how are they being addressed?

This assignment is to take the form of a well researched essay i.e. a literature review. The standard expected (senior undergraduate) is that it could be delivered at an Engineers Australia monthly forum.

Ensure that:

- It is well referenced (Harvard System) with the most current literature i.e. the literature and figures quoted are not out-dated
- It is well illustrated with figures and tables that are suitably annotated and referenced.
- You use suitable subheadings for the various sections.

Assessment Due Date

Week 8 Friday (8 Sept 2017) 5:00 pm AEST

Submit electronically as a Word or pdf file via Moodle with your name, unit code and assignment number e.g. ENTC13011 Assignment 2

Return Date to Students

Returned electronically or via Moodle as ENTC13012 Assignment 2 Marked

Weighting

30%

Minimum mark or grade

To Pass this unit you must submit all assessment items (assignments) and obtain a minimum of 40% for any single assessment item (assignment) and must obtain an overall grade of 50% or more on all assessment items (assignments).

Assessment Criteria

The assessment criteria will be based on:

- Presentation and layout i.e. the general appearance and style of the document, attention to detail and quality to provide a legible, professional looking document
- Effective written communication skills i.e. are clear, coherent and succinct that demonstrate an understanding of content
- Content. This includes the accuracy and relevance of answer, application of knowledge, language and grammar used in answering questions

- Evidence of sourcing and referencing relevant material beyond that provided in the Study Guide material
- Showing the requisite equations and using the appropriate SI units and symbols
- All steps and workings to calculations to be submitted to show how an answer was derived
- Use of “in text” referencing, appropriately cited figures and tables, a complete reference or bibliographic list at the end of the assignment. All referencing is to be undertaken using the Harvard System.

Referencing Style

- [Harvard \(author-date\)](#)

Submission

Online

Submission Instructions

Submit electronically via Moodle with your name, unit code and assignment number e.g. ENTC13011 Assignment 2

Learning Outcomes Assessed

- Understand the meaning and importance of environmental aspects of the engineering profession, as well as risk analysis and its assessment.
- Describe water pollutants, non-point sources of water pollution and water quality management.
- Describe the state of knowledge in the field of hazardous waste engineering, tracing the quantities of waste generated, transportation controls, resource recovery and ultimate disposal alternatives.
- Describe the environmental effects of nuclear generation of electricity and of radionuclides that are in the accessible environment.
- Describe the devices used in controlling gaseous contaminants.
- Define the major consideration in the implementations of an environmental policy.
- Describe environmental ethics, in terms of a relationship between people and nature.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Information Technology Competence
- Ethical practice

3 Presentation and Written Assessment

Assessment Type

Presentation and Written Assessment

Task Description

A City Council wishes to site a new mega waste management facility within 20km of the Central Business District (CBD) for household, industrial and hazardous wastes. You have been hired as a consultant to select a site and to provide an Environmental Impact Assessment (EIA) to Council.

Describe how you would go about undertaking this i.e. site selection criteria and the major sets of legislation you will need to adhere to. As part of your brief you have also been asked to scope 21st century ways that the council could use to prolong the life of the land-fill area i.e. recycling and other options. Assume that you are not constrained by costs.

This assessment item will take the form of:

Group Work (20% towards final mark)

You will need to form or be assigned to groups during the first few weeks of this unit. It is recommended that you start to gather this information and communicate with one another at an early stage via 24/7 Zoom, email etc. One of the "Deliverables" is to present a live PowerPoint presentation to Council (unit coordinator, ENTC13011 students and other CQU staff) of your proposal via Zoom or other web based audio-visual medium during weeks 11 and 12 (week dependent upon student numbers). The presentation will be ½ hour duration with 10 minutes of question time allocated. The mark awarded (for group) besides being based on factual content will include how well you verbally answered the questions posed by the client.

The preparatory group work will need to be undertaken via a Moodle forum and other media e.g. Skype, email etc. As professionals you need to be able to allocate tasks to other group members, to share and or pool information and for the group to make a cohesive presentation to their client and peers.

Individual Work (20% towards final mark)

An individual Environmental Impact Assessment (EIA) report will then need to be submitted. This submission should incorporate any feedback you received during the presentation. The format of the EIA should be similar to that used by environmental engineering consultancies i.e. review EIA reports in the published literature.

Assessment Due Date

Review/Exam Week Wednesday (11 Oct 2017) 5:00 pm AEST

Submit electronically as a Word or pdf file via Moodle with your name, unit code and assignment number e.g. ENTC13011 Assignment 3

Return Date to Students

Returned electronically or via Moodle as ENTC13011 Assignment 3 Marked

Weighting

40%

Minimum mark or grade

To Pass this unit you must submit all assessment items (assignments) and obtain a minimum of 40% for any single assessment item (assignment) and must obtain an overall grade of 50% or more on all assessment items (assignments).

Assessment Criteria

The assessment criteria will be based on:

- Presentation and layout i.e. the general appearance and style of the PowerPoint presentation and the EIA report, attention to detail and quality to provide a legible, professional looking PowerPoint presentation and EIA report
- Effective written communication skills i.e. are clear, coherent and succinct that demonstrate an understanding of content
- Content. This includes the accuracy and relevance of answer, application of knowledge, language and grammar used in answering questions
- Evidence of sourcing and referencing relevant material beyond that provided in the Study Guide material
- Showing the requisite equations and using the appropriate SI units and symbols
- All steps and workings to calculations to be submitted to show how an answer was derived
- Use of "in text" referencing, appropriately cited figures and tables, a complete reference or bibliographic list at the end of the assignment. All referencing is to be undertaken using the Harvard System.

Referencing Style

- [Harvard \(author-date\)](#)

Submission

Online Group

Submission Instructions

Group Submission of Powerpoint at presentations and Individual Report Submission in week 13.

Learning Outcomes Assessed

- Understand the meaning and importance of environmental aspects of the engineering profession, as well as risk analysis and its assessment.
- Describe water pollutants, non-point sources of water pollution and water quality management.
- Describe problems connected with quantities and composition of municipal solid waste (MSW); its collection, disposal and possible resource recovery.
- Describe the state of knowledge in the field of hazardous waste engineering, tracing the quantities of waste generated, transportation controls, resource recovery and ultimate disposal alternatives.
- List the types of air pollution and describe their influence on human health.
- Describe the methods of measurements and controls of particulate contaminants.
- Describe the devices used in controlling gaseous contaminants.
- Explain noise pollution problems, reasons why widespread recognition of noise is a significant environmental pollution and potential hazard and some methods of noise pollution control.
- Define the major consideration in the implementations of an environmental policy.
- Describe environmental ethics, in terms of a relationship between people and nature.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Team Work
- Information Technology Competence
- Ethical practice

4 Workbook

Assessment Type

Written Assessment

Task Description

Each student is to submit a Workbook (compulsory) at the conclusion of this unit whereby s/he has answered all the Review Questions and Numerical Problems at the end of each Module. The Review Questions and Numerical Problems are detailed in the Study Guide. These will be discussed and assistance provided via weekly Zoom tutorial sessions. To obtain a PASS mark for this compulsory assessment item a student must successfully attempt and answer at least 75% of all the Review Questions and Numerical Problems in the Study Guide.

Assessment Due Date

Review/Exam Week Tuesday (10 Oct 2017) 5:00 pm AEST

Submit electronically as a Word or pdf file via Moodle with your name, unit code and assignment number e.g. ENTC13011 Assignment 4 Workbook

Return Date to Students

Returned electronically or via Moodle as ENAR12012 Assignment 4 Marked

Weighting

Pass/Fail

Minimum mark or grade

To PASS this unit you must submit all assessment items (assignments) and obtain a Pass Mark for this assessment item.

Assessment Criteria

To obtain a PASS mark for a Workbook a student must successfully attempt at least 75% of the Review Questions and Numerical Problems.

The assessment criteria will be based on:

- Presentation and layout i.e. the general appearance and style of the document, attention to detail and quality to provide a legible, professional looking document
- Effective written communication skills i.e. are clear, coherent and succinct that demonstrate an understanding of content
- Content. This includes the accuracy and relevance of answer, application of knowledge, language and grammar used in answering questions
- Evidence of sourcing and referencing relevant material beyond that provided in the Study Guide material
- Showing the requisite equations and using the appropriate SI units and symbols
- All steps and workings to calculations to be submitted to show how an answer was derived.

Referencing Style

- [Harvard \(author-date\)](#)

Submission

Online

Submission Instructions

Submit electronically via Moodle with your name, unit code and assignment number e.g. ENTC13011 Workbook

Learning Outcomes Assessed

- Understand the meaning and importance of environmental aspects of the engineering profession, as well as risk analysis and its assessment.
- Describe water pollutants, non-point sources of water pollution and water quality management.
- Describe problems connected with quantities and composition of municipal solid waste (MSW); its collection, disposal and possible resource recovery.
- Describe the state of knowledge in the field of hazardous waste engineering, tracing the quantities of waste generated, transportation controls, resource recovery and ultimate disposal alternatives.
- Describe the environmental effects of nuclear generation of electricity and of radionuclides that are in the accessible environment.
- List the types of air pollution and describe their influence on human health.
- Describe the methods of measurements and controls of particulate contaminants.
- Describe the devices used in controlling gaseous contaminants.
- Explain noise pollution problems, reasons why widespread recognition of noise is a significant environmental pollution and potential hazard and some methods of noise pollution control.
- Define the major consideration in the implementations of an environmental policy.

- Describe environmental ethics, in terms of a relationship between people and nature.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Team Work
- Information Technology Competence
- Ethical practice

Academic Integrity Statement

As a CQUniversity student you are expected to act honestly in all aspects of your academic work.

Any assessable work undertaken or submitted for review or assessment must be your own work. Assessable work is any type of work you do to meet the assessment requirements in the unit, including draft work submitted for review and feedback and final work to be assessed.

When you use the ideas, words or data of others in your assessment, you must thoroughly and clearly acknowledge the source of this information by using the correct referencing style for your unit. Using others' work without proper acknowledgement may be considered a form of intellectual dishonesty.

Participating honestly, respectfully, responsibly, and fairly in your university study ensures the CQUniversity qualification you earn will be valued as a true indication of your individual academic achievement and will continue to receive the respect and recognition it deserves.

As a student, you are responsible for reading and following CQUniversity's policies, including the [Student Academic Integrity Policy and Procedure](#). This policy sets out CQUniversity's expectations of you to act with integrity, examples of academic integrity breaches to avoid, the processes used to address alleged breaches of academic integrity, and potential penalties.

What is a breach of academic integrity?

A breach of academic integrity includes but is not limited to plagiarism, self-plagiarism, collusion, cheating, contract cheating, and academic misconduct. The Student Academic Integrity Policy and Procedure defines what these terms mean and gives examples.

Why is academic integrity important?

A breach of academic integrity may result in one or more penalties, including suspension or even expulsion from the University. It can also have negative implications for student visas and future enrolment at CQUniversity or elsewhere. Students who engage in contract cheating also risk being blackmailed by contract cheating services.

Where can I get assistance?

For academic advice and guidance, the [Academic Learning Centre \(ALC\)](#) can support you in becoming confident in completing assessments with integrity and of high standard.

What can you do to act with integrity?



Be Honest

If your assessment task is done by someone else, it would be dishonest of you to claim it as your own



Seek Help

If you are not sure about how to cite or reference in essays, reports etc, then seek help from your lecturer, the library or the Academic Learning Centre (ALC)



Produce Original Work

Originality comes from your ability to read widely, think critically, and apply your gained knowledge to address a question or problem